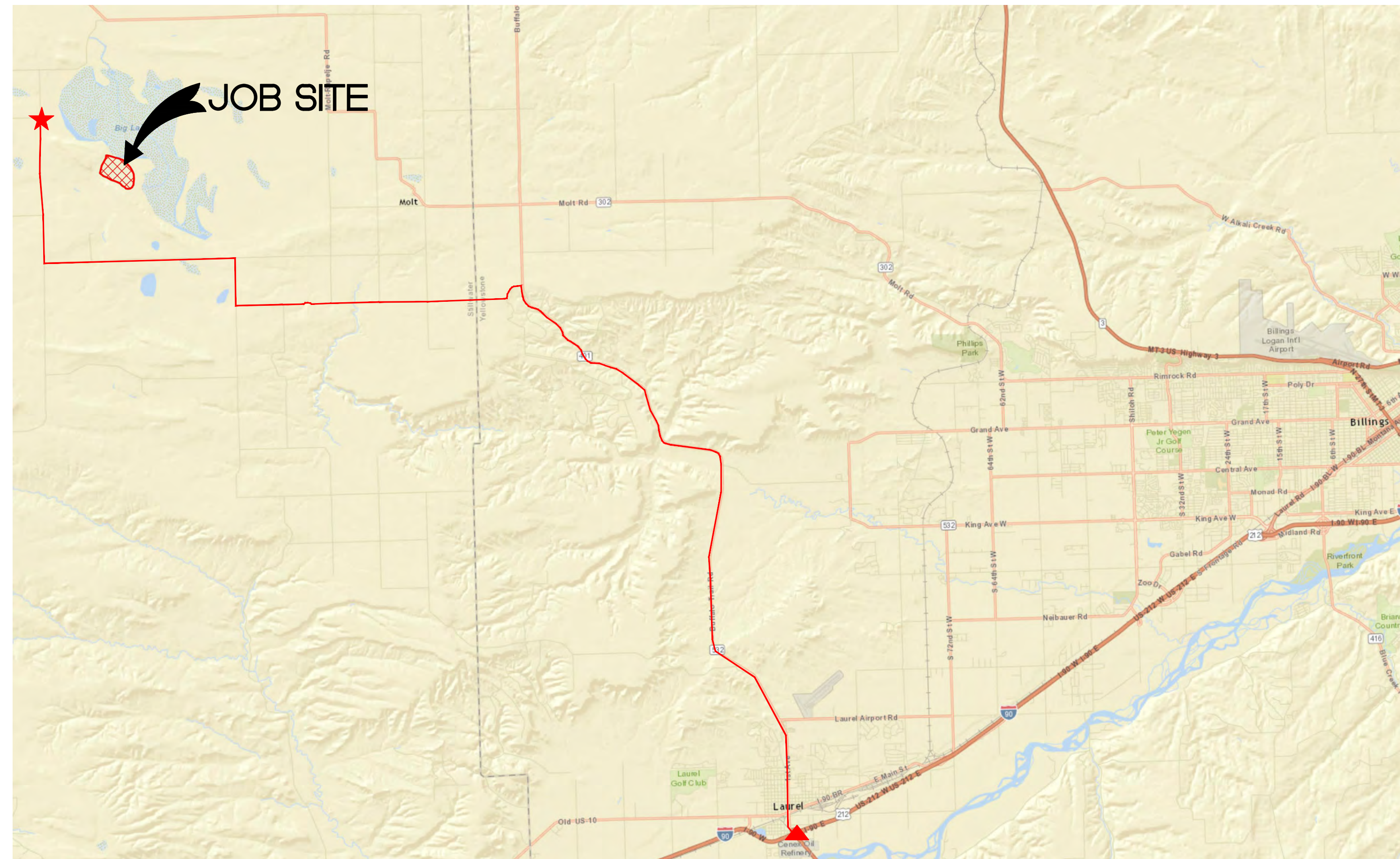
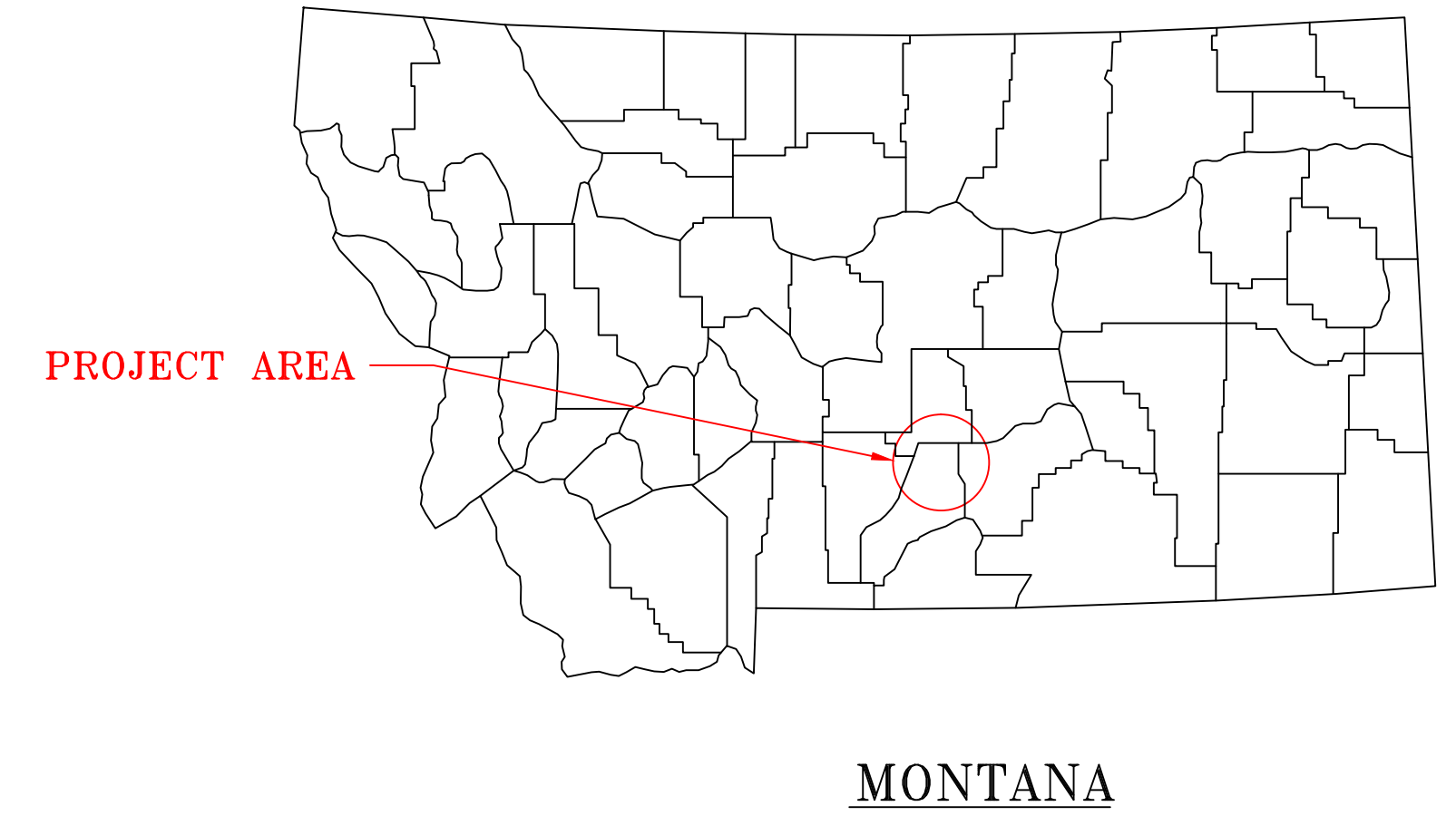




DUCKS UNLIMITED
PROJECT
BIG LAKE IMPOUNDMENT
NE 1/4 SEC 1, TOWNSHIP 1N, RANGE 21E
STILLWATER COUNTY, MONTANA



INDEX

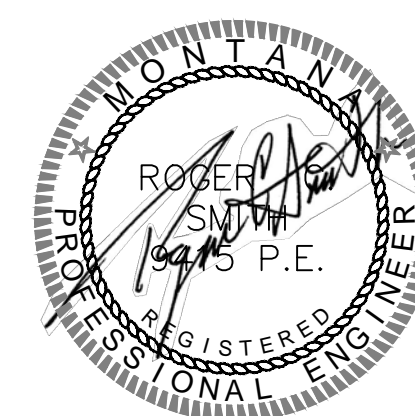
1. PROJECT LOCATION MAPS
2. SITE PLAN/ ESTIMATED QUANTITIES AND NOTES
3. RIP RAP INSTALLATION
4. SPILLWAY EXCAVATION

VICINITY MAP
NOT TO SCALE

MAP POINT "▲" IS LOCATED @ INTERSECTION OF INTERSTATE 90 AND MT-HWY 310/1ST AVE LOCATED IN STILLWATER COUNTY, MT. MAP POINT "▲" IS LOCATED IN LAUREL, MT ON INTERSTATE 90. SITE FROM MAP POINT: HEAD NORTH ON MT-HWY 310/1ST AVE/BUFFALO TRAIL RD FOR APPROX. 15 MILES THEN HEAD WEST ONTO LAZY K-T RD/REIFLE RD FOR APPROX. 6 MILES. THEN HEAD NORTH ON LEUTHOLD RD FOR ONE MILE BEFORE GOING WEST ONTO COLUMBUS MOLT RD FOR 4 MILES. HEAD NORTH ON WHEAT BASIN RD FOR APPROX 2 1/2 MILES; FIELD ACCESS ON RIGHT WILL LEAD TO TRAIL TO WORK AREA.

MAP POINT "★" IS LOCATED @ INTERSECTION OF WHEAT BASIN ROAD AND FIELD ACCESS TO SITE.
PROJECT COORDINATES:
45° 52' 7.57"N
109° 3' 4.63"W

IF THESE PLANS ARE NOT PLOTTED AND/OR REPRODUCED AT THE ORIGINAL SIZE OF 24"x 36" ANY SCALE REFERENCED HEREIN SHOULD BE DISREGARDED AND THE PLANS SHOULD BE CONSIDERED "NOT TO SCALE."



LOCATION MAP
NOT TO SCALE

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Montana.

Roger C. Smith, P.E.
for Ducks Unlimited, Inc.
License No. 9415

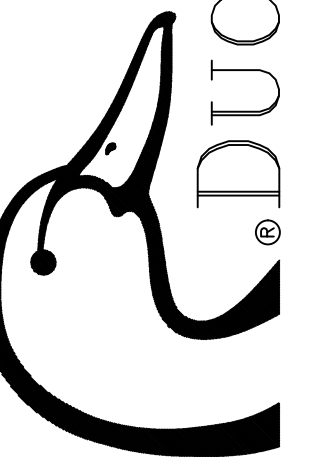
ROGER SMITH, P.E.
DU - BISMARCK, ND
701-355-3553

07-10-2015
Date

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BISMARCK, NORTH DAKOTA (701) 355-3500



BIG LAKE IMPOUNDMENT
STILLWATER COUNTY
MONTANA

Sheet No.	Revisions	Date	By
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x

DESIGNED BY: RS
DRAWN BY: CH
SURVEYED BY: BK
BOOK NO. -

DATE:
8/10/2015
PROJECT NO.:
US-MT-32-2

SHEET 1



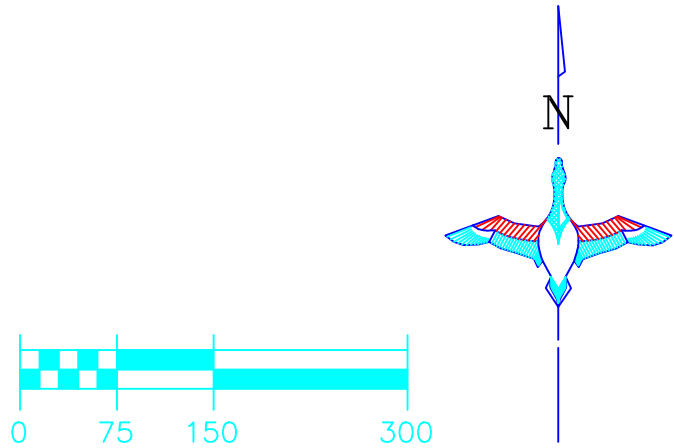
ITEM	UNIT	QUANTITY
MOBILIZATION	LUMP SUM	1
SITE PREPERATION (TOPSOIL)*	LUMP SUM	1
EXCAVATION (SPILLWAY)	CY-P	1,155
EMBANKMENT CONSTRUCTION	CY-P	220
RIP RAP (DU CLASS I) RISER	TON	47
RIP RAP (DU CLASS I)	TON	750
FILTER FABRIC	SQ YDS	1,567

SPEC. #	ITEM
201	MOBILIZATION
202	SITE PREPERATION (TOPSOIL)*
203	EXCAVATION (SPILLWAY)
204	EMBANKMENT CONSTRUCTION
305	RIP RAP (DU CLASS I) RISER
305	RIP RAP (DU CLASS I)
305	FILTER FABRIC

NOTE* THE SPILLWAY EXCAVATION INCLUDES 446 CY-P OF TOPSOIL REMOVAL AND REPLACEMENT.

MINERAL SOILS EXCAVATED FROM SPILLWAY MAY BE USED FOR EMBANKMENT FACE FILL OPERATIONS. THE CONTRACTOR MAY BORROW FROM THE SOUTH EAST BORROW AREA. SHOULD BORROW BE REMOVED FROM THIS AREA THE CONTRACTOR SHALL STOCKPILE 6" OF TOPSOIL AND REPLACE.

THE ENGINEER ESTIMATES THAT 533 (500 EMBANKMENT FACE, 33 RISER) IS REQUIRED. A CONVERSION OF 1.5 TONS/CY WAS USED TO DETERMINE THE RIP RAP ESTIMATED QUANTITY.



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STILLWATER COUNTY

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x	x		x	x
x	x		x	x
x	x		x	x
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CAD FILE:
BigLakeBase

DESIGNED BY: RS

DRAWN BY: CH

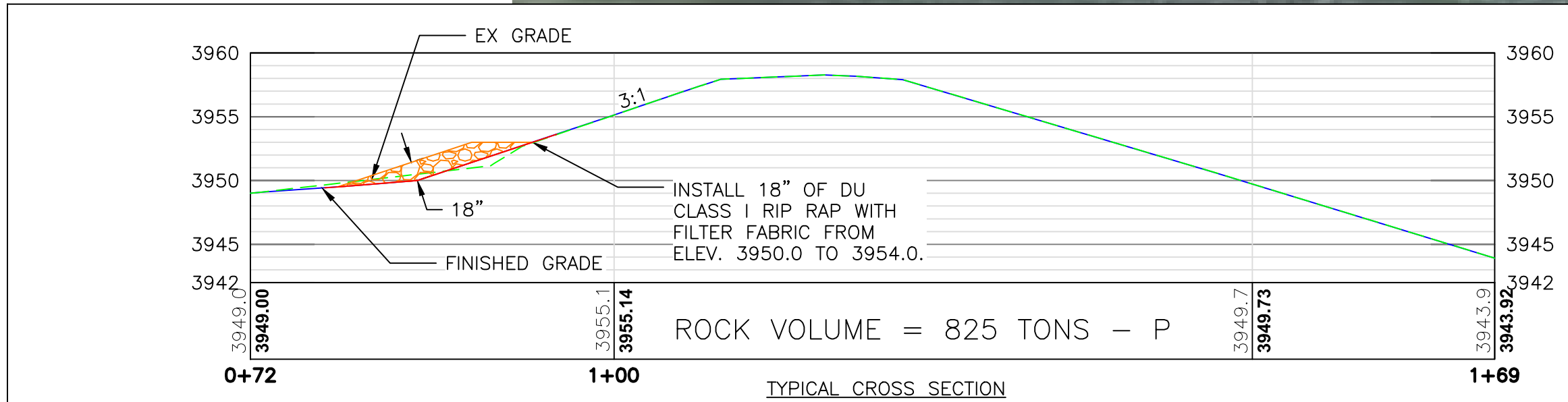
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BOOK NO. -

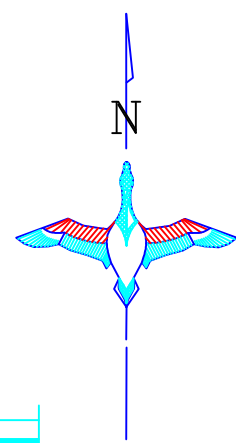
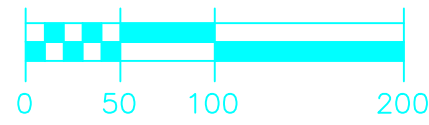
DATE:
8/10/2015

PROJECT NO.:
US-MT-32-2

SHEET 2

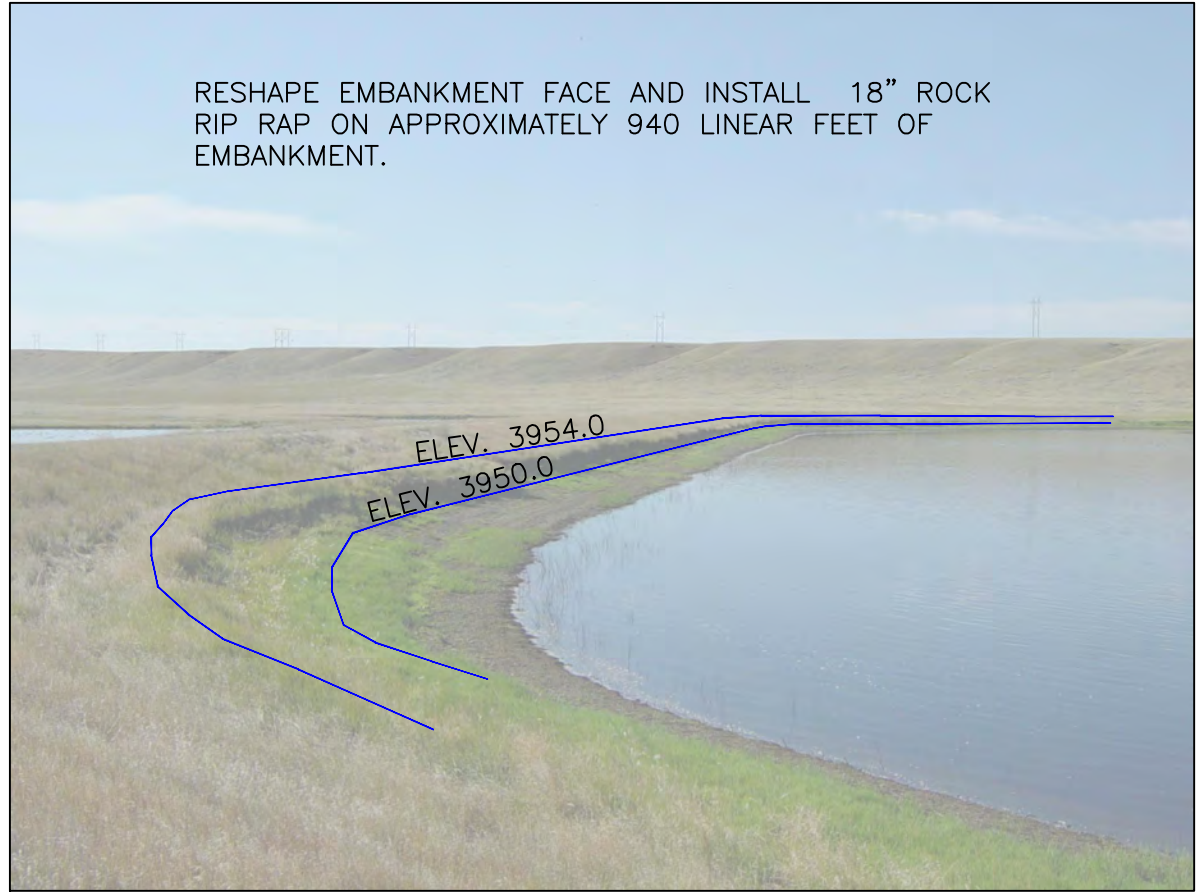
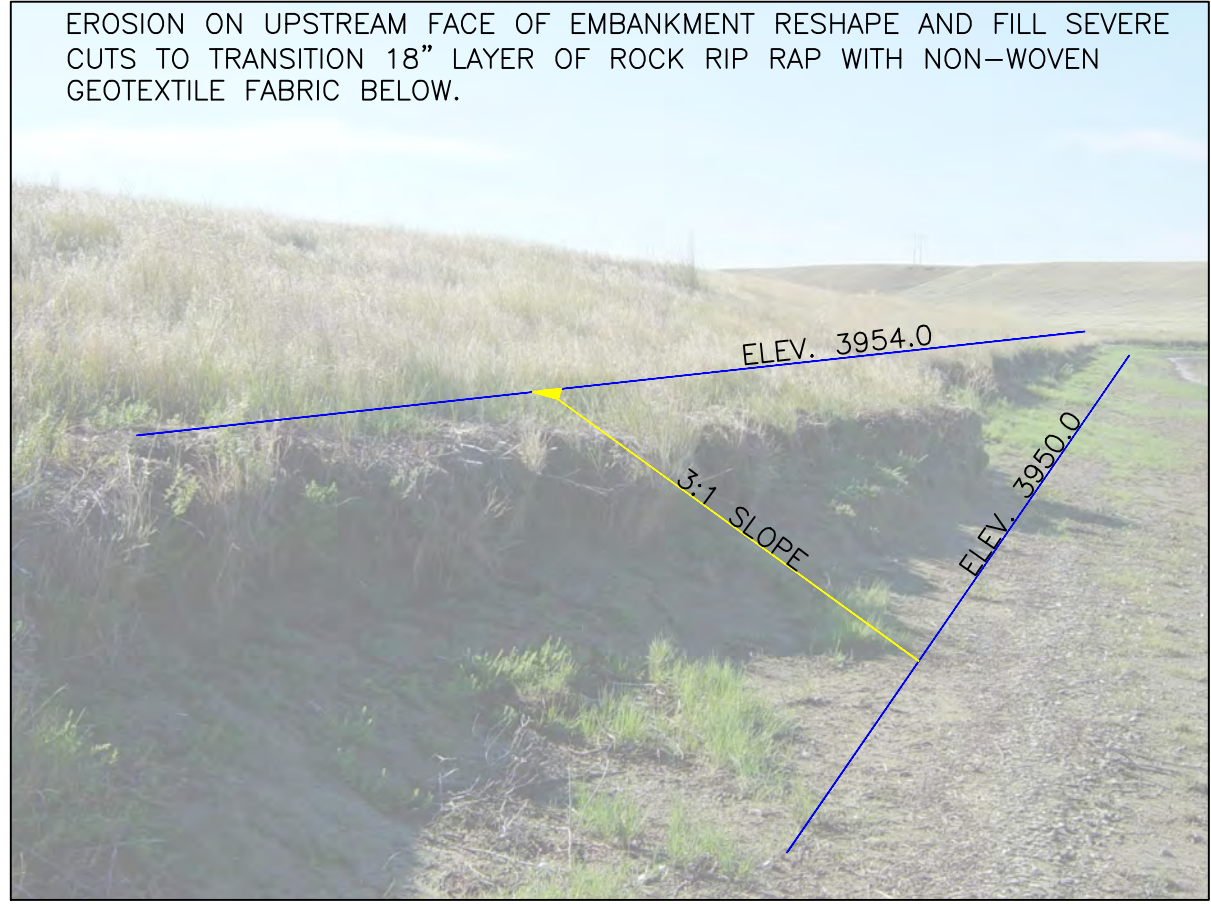


SECURE FILTER FABRIC TO EMBANKMENT W/12" FABRIC PIN W/2"x 3/8" WASHER @ 6'-0" C-C



BP: 0+00.00
N: 16,670,724.61
E: 21136,581.37

EP: 2+10.87
N: 16,670,724.61
E: 21136,792.24



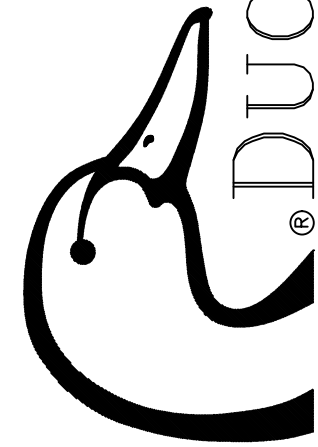
ADD ROCK PROTECTION COMPLETELY AROUND THE EXISTING RISER AS DIRECTED IN THE FIELD.

46.5 TON CLASS I ROCK RIP RAP
FABRIC 625 SF 69.5 S.Y.

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BIG LAKE IMPOUNDMENT
STILLWATER COUNTY
MONTANA

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1	x	x	
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3	x	x	
4	x	x	
5	x	x	
6	x	x	
7	x	x	
8	x	x	
9	x	x	
10	x	x	

CAD FILE:
BigLakeBase

DESIGNED BY: RS

DRAWN BY: CH

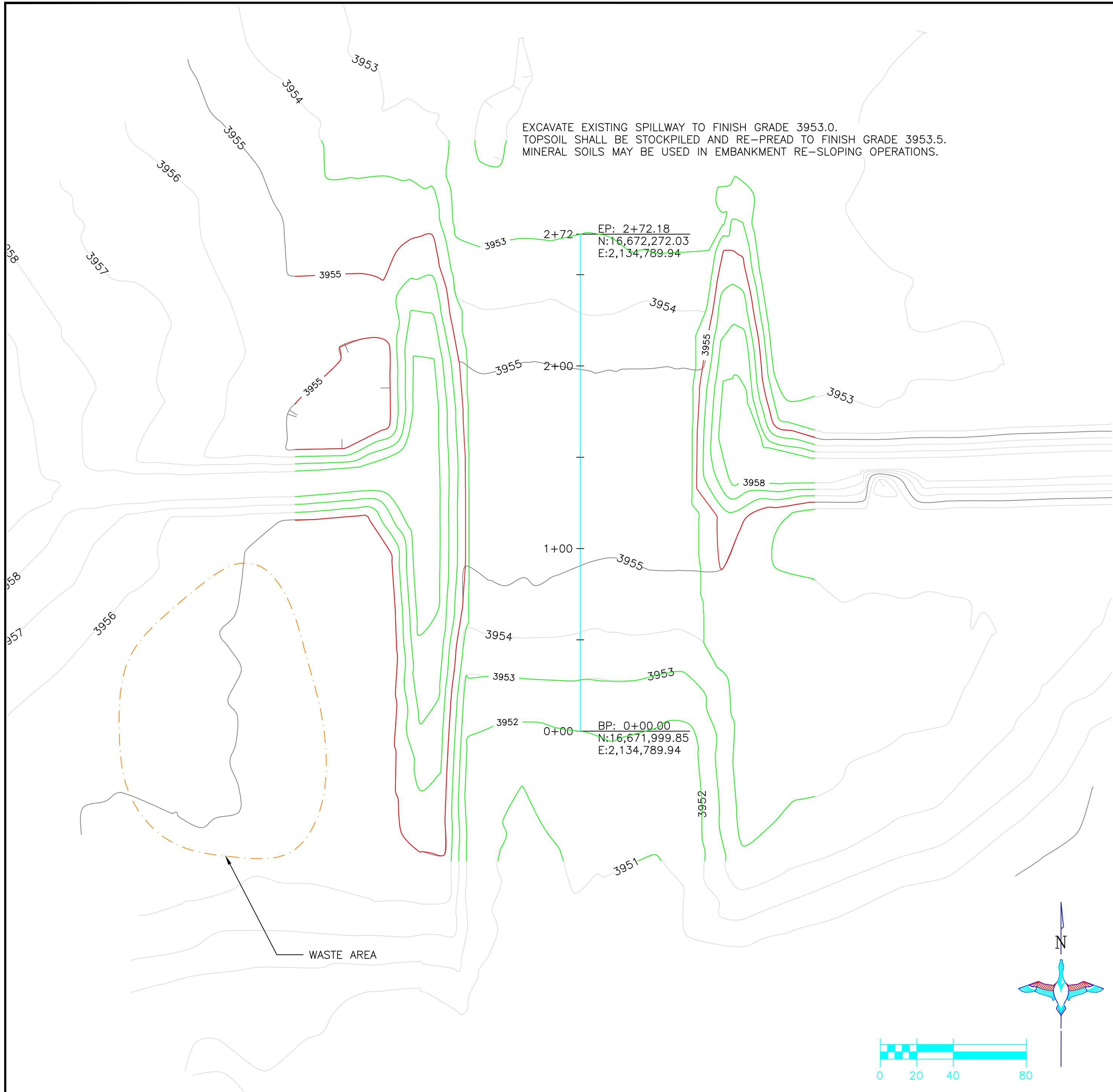
SURVEYED BY: BK

BOOK NO. -

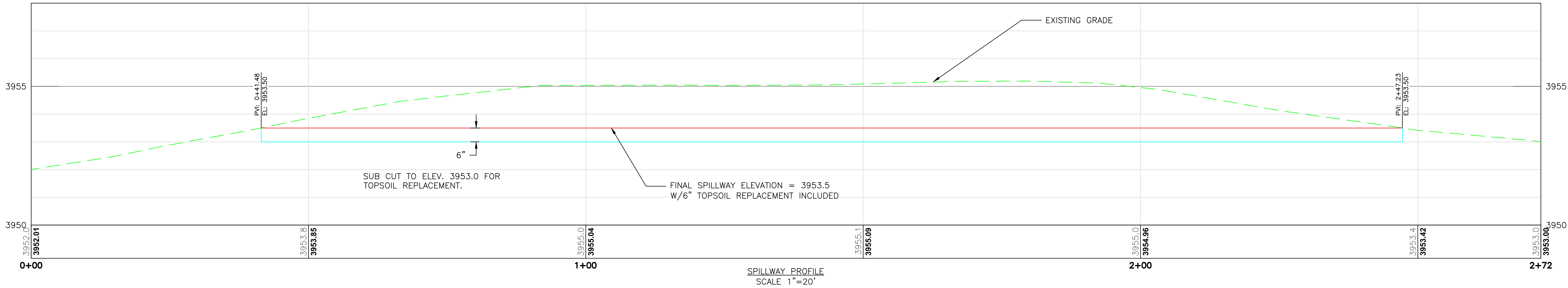
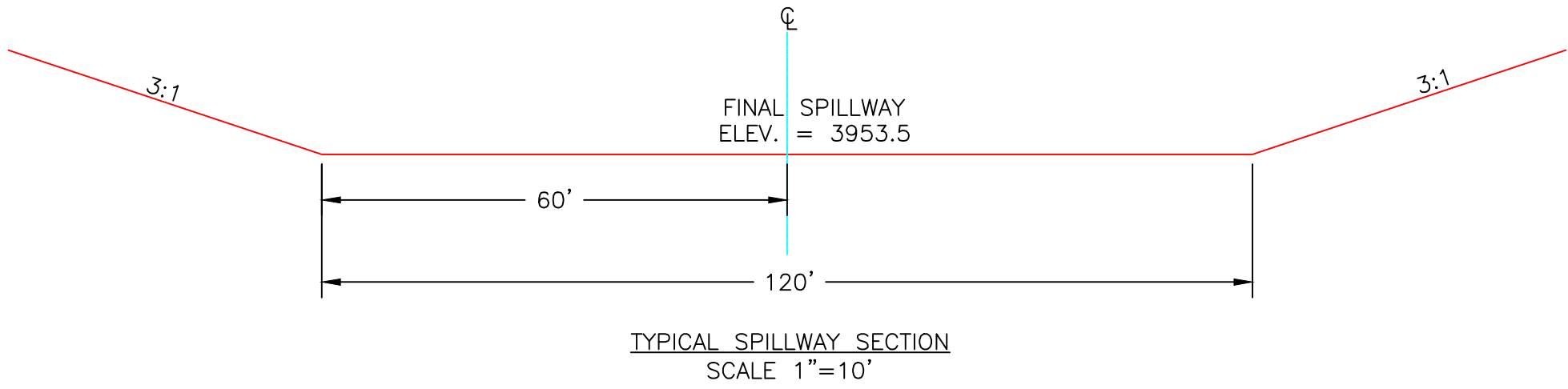
DATE:
8/10/2015

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SHEET 3



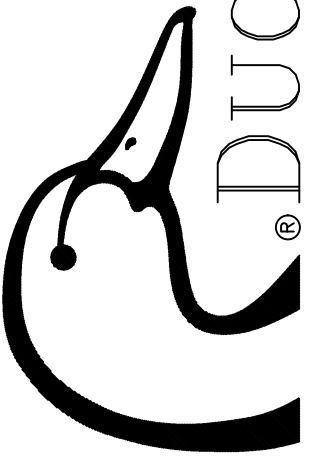
SPILLWAY VOLUMES				
NAME	AREA(SQ. FT.)	CUT(ADJUSTED)(CU. YD.)	FILL(ADJUSTED)(CU. YD.)	NET(ADJUSTED)(CU. YD.)
SPILLWAY EXCAVATION VOLUME	24088	1,155	0.0	1,155<CUT>
SPILLWAY TOPSOIL	24088	446		446<CUT>
PRESUMED MINERAL SOILS	24088	709		709<CUT>



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CAD FILE:
BigLakeBase

DESIGNED BY: RS

DRAWN BY: CH

SURVEYED BY: BK

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8/10/2015

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